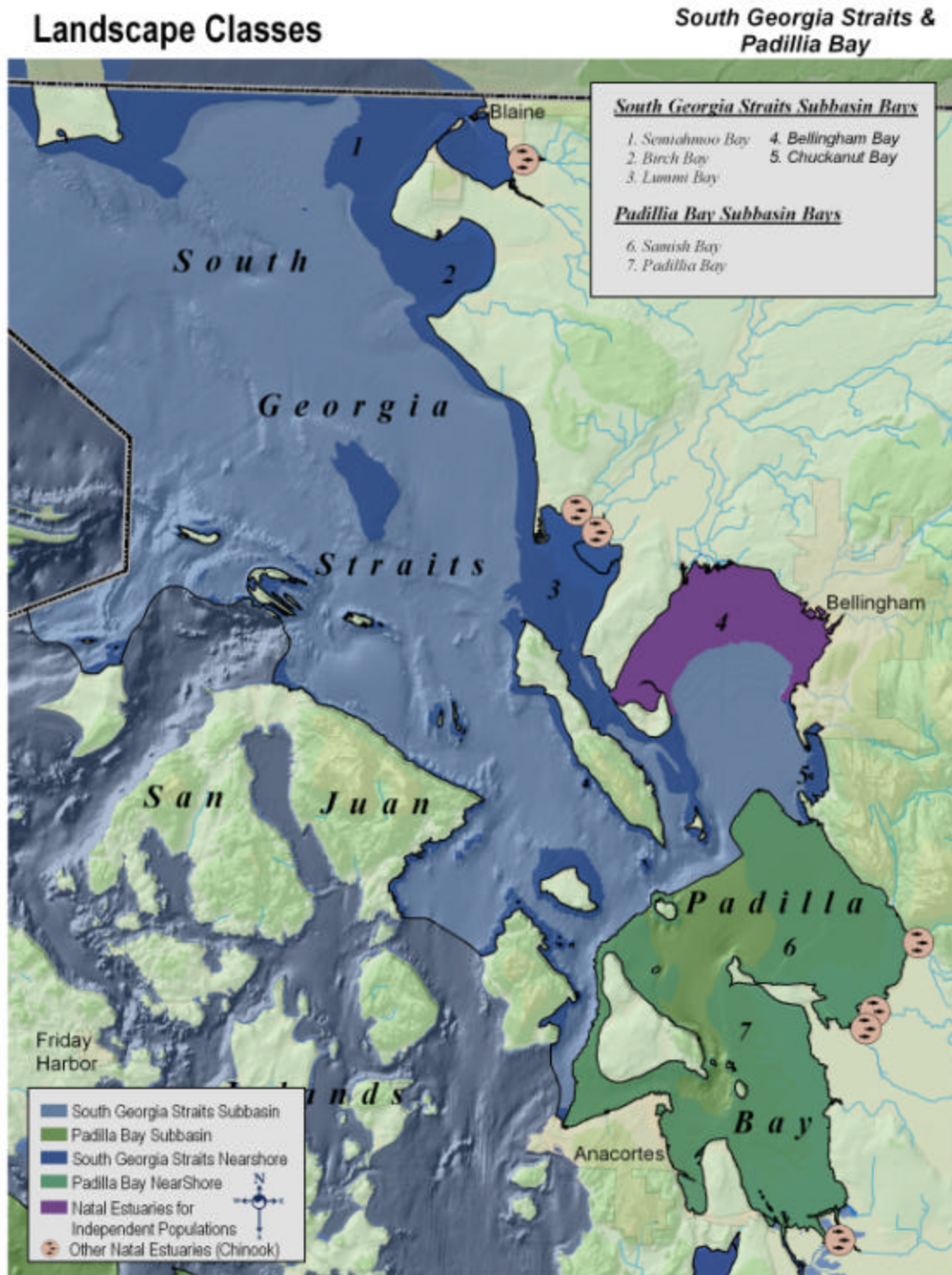


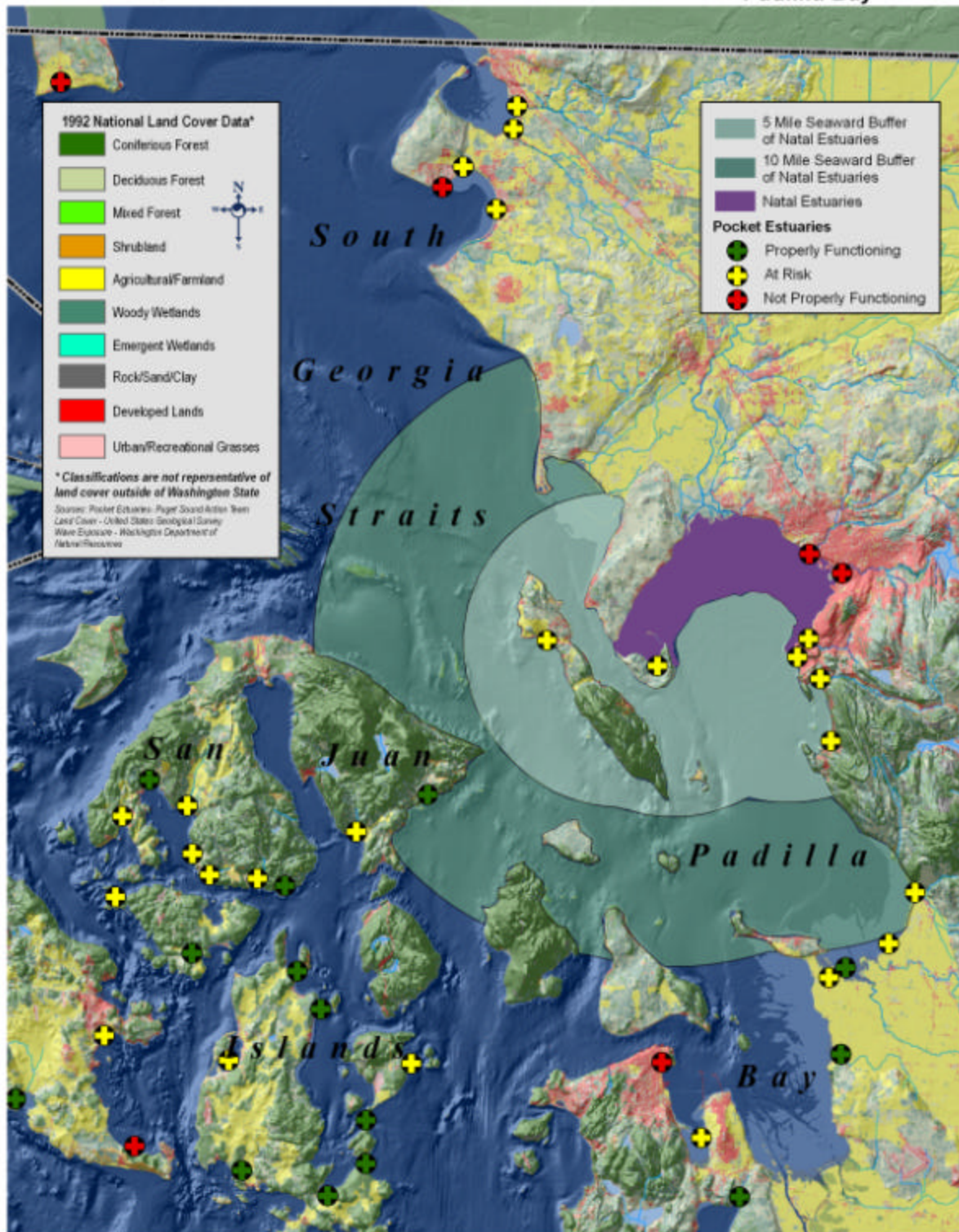
## Appendix E-1: South Georgia Straits



**Figure E-1.1:** South Georgia Strait and Padilla/Samish Landscape Classes.

# Landscape Functions

## South Georgia Straits & Padillia Bay

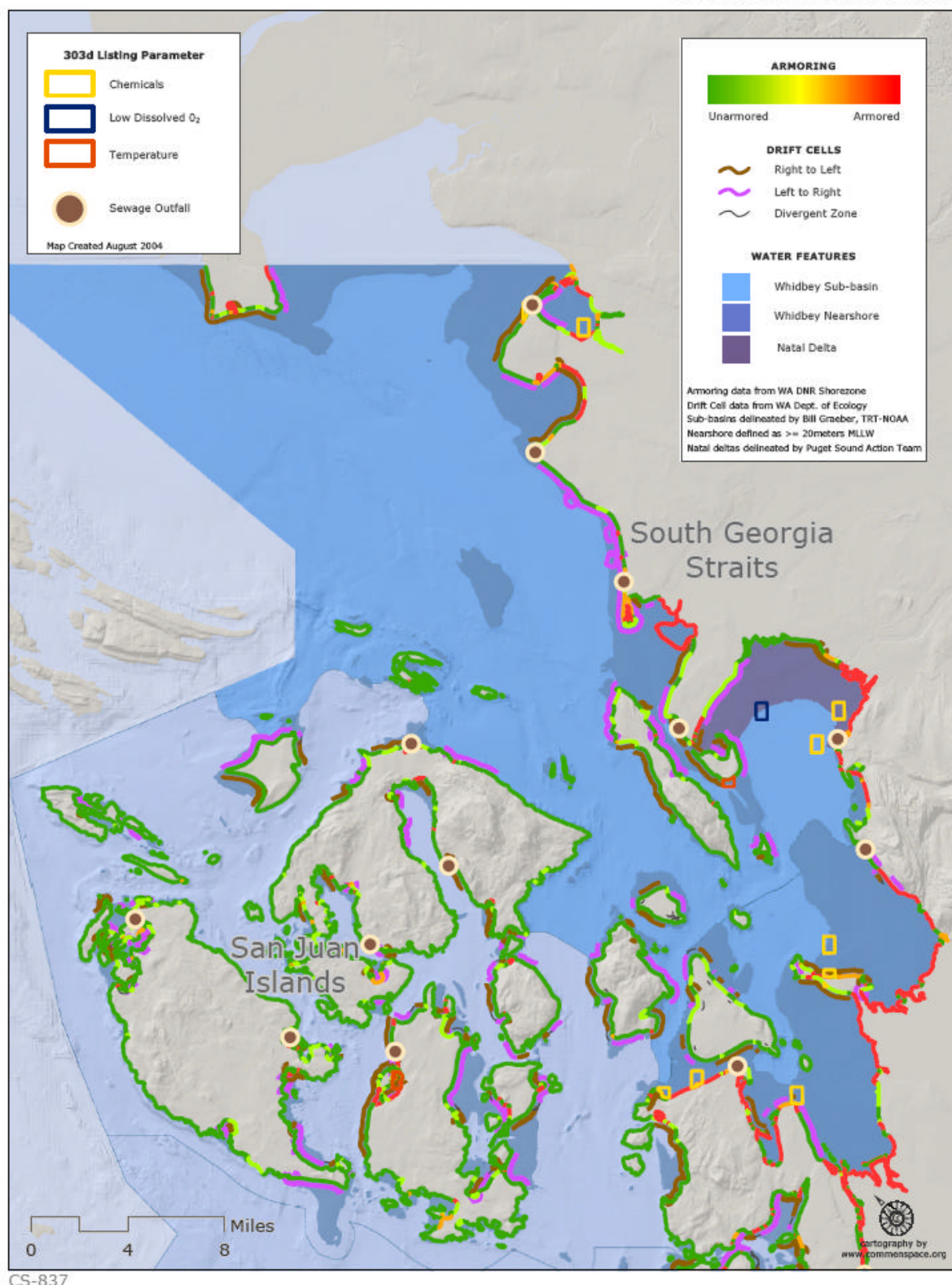


**Figure E-1.2:** Landscape Functions for the South Georgia Straits and Padilla/Samish Bay sub-basins.



# SUB-BASIN STRESSORS

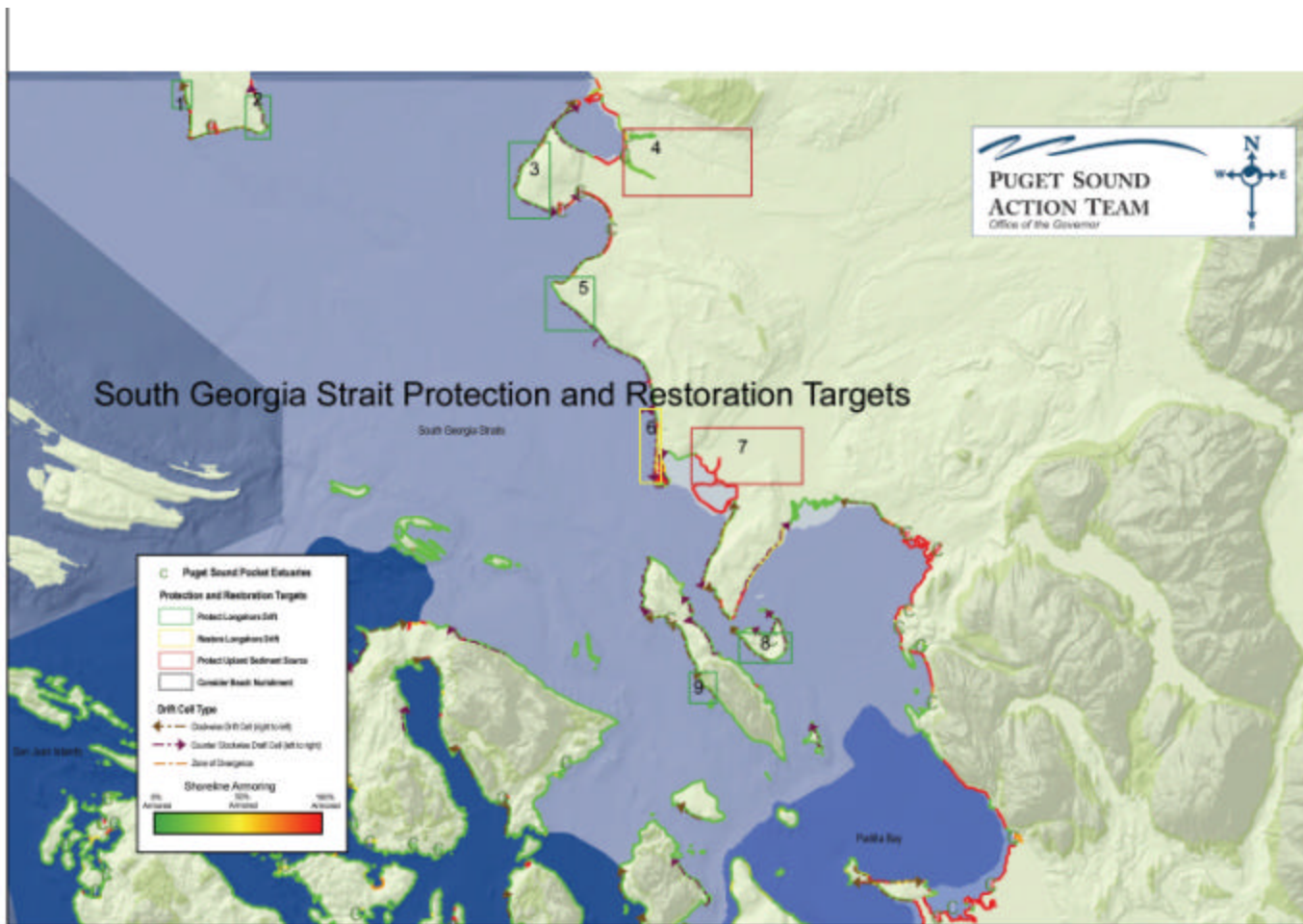
## PADILLA BAY & SOUTH GEORGIA STRAITS



**Figure E-1.3:** Stressors for the South Georgia Straits and Padilla/Samish Bay Sub-Basins.

Pocket Estuary Identifier	Latitude	Longitude	Photo ID #	Freshwater (Y/N)	Likely Chinook Functions			Shoreline Dev.	Urbanization	Diking/Filling	Susceptibility to spills and discharges	Aquaculture related substrate alterations	Vulnerability to Sea Level Rise	Final Chinook Function Score
					Feeding	Osmoreg.	Refuge							
GS1 - Chuckanut Bay	48.671	122.489	010524-145352a	Y	x	x	x	x		x	x		x	AR
GS2 - Chuckanut Creek	48.701	122.498	010524-145130	Y	x	x	x	x	x	x	x		x	AR
GS3 - Post Point	48.711	122.515	010524-144834	N			x	x		x	x		x	AR
GS4 - Padden Creek	48.72	122.507	010524-144650	Y	x	x	x	x	x	x	x		x	AR
GS5 - Whatcom Creek	48.752	122.484	010524-144426	Y	x	x	x	x	x	x	x		x	NPF
GS6 - Squaticum Creek	48.761	122.508	010524-144056	Y	x	x	x	x	x	x	x		x	NPF
GS7 - Portage Island	48.705	122.617	010524-132032	Y	x	x	x			x				AR
GS8 - Legoe Bay	48.716	122.698	010524-125010	Y	x	x	x	x		x	x		x	AR
GS9 - Terrell Creek	48.923	122.744	010524-121144	Y	x	x	x	x	x	x	x		x	AR
GS10 - Cottonwood	48.943	122.769	010524-121044	Y	x	x	x	x		x	x		x	AR
GS11 - Birch Bay	48.933	122.784	010524-120826	N			x	x	x	x	x		x	NPF
GS12 - California Creek	48.962	122.733	010524-120004	Y	x	x	x		x		x			AR
GS13 - Dakota Creek	48.973	122.731	010524-115458	Y	x	x	x	x	x		x			AR
GS14 - Point Roberts	48.978	123.066	010524-113516	Y				x	x	x	x		x	NPF

**Figure E-1.4:** South Georgia Straits sub-basin pocket estuary locations, likely Chinook functions, and observed stressors.



**Figure E-1.5:** South Georgia Straits sub-basin analysis of drift cells and shoreline armoring

### **SOUTH GEORGIA STRAIT SUB-BASIN**

Box 1 – The general direction of littoral drift in Point Roberts is from right to left along the shoreline from the southeast corner of the peninsula to the Canadian border. The entire southwest corner of the peninsula is a large depositional landform. While shoreline development occurs within much of this drift cell, the beach within box 1 becomes considerably less armored and so any erosion that may occur within box 1 should distribute sediments northward.

Box 2 – This box inscribes a divergence zone where the drift cell described in box 1 starts moving to the left and the drift cell that continues northward along the eastern shoreline of Point Roberts continues northward into Boundary Bay. Box 2 can be considered the “feeder bluff” for both box 1 and box 2 drift cells, therefore all depositional features within those boxes are dependent on that sediment source.

Box 3 – This box encompasses all of Birch Point, which is the “feeder” source for Semiahmoo Spit. Semiahmoo Spit is the barrier beach for Drayton Harbor, an embayment that contains several miles of low gradient shoreline and two embedded pocket estuaries.

Box 4 – This box inscribes upland sediment sources for pocket estuaries in Drayton Harbor. Long term protection of these sediment sources through appropriate riparian buffer regulations and stewardship should protect pocket estuary function and maintain a source of deltaic sediments that contribute to the unique shape and character of Drayton Harbor.

The complex structure of Drayton Harbor is a result of deltaic processes bringing sediment and freshwater into South Georgia Strait and those sediments and freshwaters being confined behind a system of spits maintained by the erosion and deposition of the Birch Point drift cell.

Box 5 – The Cherry Point “feeder” bluff supplies sediment north to Birch Bay and further south toward the refineries and Sandy Point and into Lummi Bay. This process should be protected through critical areas and appropriate shoreline management designations as well as stewardship efforts.

Box 6 - Most of the shoreline development and armoring seems to have taken place on the depositional sections of the Cherry Point drift cell. In addition to protecting the Cherry Point area as a source of sediment, education about drift cell functions should be offered to residents further south so that landowners can make informed decisions about real and perceived erosion risk. It may be possible to engage the community in smaller scale restoration efforts like removing bulkheads that are deemed to be unnecessary.

Box 7 – Much of the shallow shelf structure of Lummi Bay is due to historic deltaic processes. These processes no longer occur because of the disconnection of the Lummi delta from the Nooksack River. The long term erosion of the shallow shelf structure between the historic Lummi delta and Sandy Point could potentially contribute to the erosion of the sand spit.

Box 8 – This feeder bluff provides the sediment source for two diverging drift cells that define the shape of Portage Island including the long spits which define the border of Portage Bay.

Box 9 – While much of southern Lummi Island is a rocky coastline, this feeder bluff supplies a long continuous drift cell on the western shoreline.

Other South Georgia Sub-basin Shorelines – Other shorelines within South Georgia Basin are generally in the transport and depositional sections of drift cells whose sediment source is recommended for protection above. Within these sections, limited development practicing shoreline best management practices will likely have little effect on sediment transport patterns. However, strong education programs, Critical Areas Ordinance and Shoreline Management implementation should be employed.